Why did the USEPA focus on only gastrointestinal disease?

Even though contact with contaminated water can lead to ear or skin infections and inhalation of contaminated water can cause respiratory diseases, EPA's recommended water quality criteria for bacteria are only intended to protect against gastrointestinal illness-causing pathogens, partly because of the difficulties in analyzing for and detecting the many possible pathogens or parasites responsible for such diseases. As part of EPA's Beach Action Plan, EPA intends to investigate the development of water quality criteria for other pathogens capable of causing other adverse health effects. Until such time, however, EPA's policy is that States and Tribes should apply primary contact criteria.

Among the studies since 1984 used by EPA to determine the new biological criteria there were only two freshwater studies. One in Canada found staphylococcus to be the best indicator of gastrointestinal illness and one in France found a good relationship between swimming related illness and fecal coliform concentrations.

EPA reviewed the literature on epidemiological studies conducted after EPA performed its marine and freshwater studies of swimming-associated health effects. The review examined recent data to determine if EPA's findings were supported or if different indicator bacteria were consistently shown to have quantitatively better predictive abilities. EPA's Office of Research and Development (ORD) reviewed 11 separate peer-reviewed studies. Although it has been shown that some organisms are superior to others for predicting gastrointestinal illness in swimmers based on the density of the indicator organism in bathing waters, as some of the studies reviewed describe other microbes showing strong relationships to swimming-associated gastrointestinal illness, such as staphylococci, *Clostidium perfringens,* and *Aeromonas* spp., none of the studies examined by EPA in its review presented evidence that necessitate revising the 1986 water quality criteria for bacteria recommended by EPA.

ORD concluded that the epidemiological studies conducted since 1984, which examined the relationships between water quality and swimming-associated health effects, have not established any new or unique principles that might significantly affect the current guidance EPA recommends for maintaining the microbiological safety of marine and freshwater bathing beaches. Many of the studies have, in fact, confirmed and validated the findings of the U.S. EPA studies, which showed that *E. coli* and enterococci showed the strongest relationships to swimming-associated gastrointestinal illness.

Why the push for states and tribes to adopt the 1986 criteria?

EPA strongly encourages States and Tribes to adopt the recommendations set forth in *Ambient Water Quality Criteria for Bacteria* - 1986 or other water quality criteria for bacteria based on scientifically defensible methods into their water quality standards to replace water quality criteria for total or fecal coliforms. The transition to *E. coli* and enterococci bacterial indicators is an Agency priority for the triennial review of water quality standards occurring in FY2000-2002. If a State or authorized Tribe does not adopt EPA's recommended 1986 bacteria water quality criteria during this period, EPA intends to act under section 303(c)(4)(B) of the Clean Water Act to promulgate federal water quality standards, with the goal of assuring that EPA's

recommended 1986 bacteria water quality criteria apply in all States and authorized Tribes by 2003.

Making the transition to E. coli

Because many States and Tribes have identified several issues that are impeding their adoption of *E. coli* and/or enterococci as water quality criteria for bacteria, EPA is in the process of developing guidance to assist them implement the recommended criteria. Many issues will be addressed in the guidance, including a reaffirmation of the scientific validity of EPA's 1986 water quality criteria for bacteria, recommendations for how States and Tribes may make the transition from fecal coliforms to *E. coli*/enterococci, and appropriate approaches for managing risk in non-primary contact recreational waters, including the use of alternate illness rates and site-specific water quality criteria.

Methods video

A new laboratory techniques video, "Improved Enumeration Media for *E. coli* and Enterococci," is available to States, Tribes, and private laboratories. The video demonstrates the four methods currently recommended by EPA, including the mE and the mEI agar methods for enterococccci, and the modified mTEC and mTEC agar methods for *E. coli.* The purpose of the video is to introduce and demonstrate the improved methods and help answer any questions regarding these methods. Accompanying the video is a laboratory manual, explaining all methods in a step-by-step format. The laboratory manual also contains color photographs of the target colonies on all media to aid in identification. To obtain a copy of the video and methods manual, contact Latisha Parker at (202) 260-1125 or send her an e-mail at: parker.latisha@epa.gov